



*The City of* **Durham** *North Carolina*  
**Annual Sanitary Sewer System Report**  
**FY 2004 - 2005**

Welcome to the City's sixth annual summary of the performance of Durham's sewer system. This report is developed for our customers in order to meet requirements of House Bill 1160, which was passed by the North Carolina General Assembly in 1999. The bill requires owners and/or operators of wastewater collection and treatment systems to provide an annual report to users or customers. Each year's report must summarize the treatment works' and collection system's performance over a twelve-month period. In addition to making the report available to all customers, the City also submits the summary to the North Carolina Department of Environment and Natural Resources.

All water and sewer operational units are a part of the Department of Water Management. The Water and Sewer Maintenance Division is responsible for the operations and maintenance of the collection system. Sometimes referred to as the sanitary sewer system, this is the series of pipes that transport wastewater to the treatment facilities operated by the Wastewater Division. Wastewater includes all *used* domestic and process water from any drain leaving a residence, business, industry or other facility and entering the collection system.

<b>Durham's Sewer System Facilities</b>			
	<b>Collection System</b>	<b>Water Reclamation Facilities</b>	
<b>Name of Facility</b>	Operations Center	North Durham Water Reclamation Facility	South Durham Water Reclamation Facility
<b>Permit number</b>	WQCS00005	NCOO23841	NCOO47597
<b>Address</b>	1110 Martin Luther King Jr. Pky	1900 East Club Boulevard	6605 Farrington Road
<b>Operator in Responsible Charge</b>	Claude Gregory	William W. Telford	Robert D. Dodson
<b>Phone number</b>	919-560-4344	919-560-4384	919-560-4386

Wastewater travels through underground sewer pipes to the treatment plant. At the plant, wastewater is treated by physical, biological and chemical processes before it is returned to the environment via receiving streams. The health of downstream users, both human and wildlife, depends on collection and treatment plant staff who ensure that Durham's wastewater is processed to a level that is returned to the environment with NO adverse impacts. As a result of the high level of treatment, in many cases, water downstream of a water reclamation facility is cleaner than the water upstream of the facility.

This report describes the collection system operation, the wastewater treatment process and the City's grease reduction initiative. As with any large municipal system, occasional blockages cause backups and overflows. Included in this report is a table listing the spills and overflows that occurred this year and the steps taken to mitigate the impact and prevent recurrences. ALL incidents were reported to the state within 24 hours of their occurrence. By policy, news releases

to inform the public are distributed by the end of the next business day after the occurrence.

The Annual Sanitary Sewer System Report is available at City Hall, Public Libraries, Water Management and Public Works facilities and on the City's website: [www.durhamnc.gov](http://www.durhamnc.gov). Additional copies of the report may be requested by calling Water Management at (919) 560-4381.

### ***Down the Drain! Where does it go?***

The City maintains about **1200 miles** of underground pipes that carry wastewater away from homes, businesses, schools, hospitals and industries. The waste flows by gravity to lift stations located in strategic areas throughout the service area. Pumps in the "lift" stations do just that – they lift the wastewater to a higher elevation where it again flows by gravity, ultimately to one of the City's two water reclamation facilities. Sixty pump stations for the collection system are monitored and maintained by Plant Maintenance division staff.

**Did you know? 1200 miles equals the distance between Durham and Fort Worth, Texas!**

Wastewater flows either north or south, based on the location of a business, home or facility along the ridgeline. The ridgeline runs along Pettigrew Street and the railroad lines. South of Pettigrew, waste flows to the South Durham Water Reclamation Facility, located at 6605 Farrington Road. To the north of the ridgeline, waste flows to the North Durham Water Reclamation Facility at 1900 East Club Boulevard. Durham County owns and operates a third wastewater treatment plant that serves most of Research Triangle Park, Parkwood and a few other south Durham neighborhoods. The Durham County sewer system report is posted at [www.co.durham.nc.us](http://www.co.durham.nc.us)

### ***Collection System Performance***

During this reporting period, Water and Sewer Maintenance crews conducted numerous maintenance activities to clean and rehabilitate the sewer system. In addition to the activities in the table at right, crews inspected 735 manholes, repaired/replaced 215 sewer services and responded to 916 blockages.

Activity	Feet
Rodding	164,226
Flushing	352,706
Inspections (TV'd)	139,893
Mains replaced	1,385
Easements mowed	73,050

This year, improper disposal of grease continues to be the number one cause of blockages in the sewer system. In fact, **75% of the blockages were caused by grease build-up in the lines** which is similar to plaque buildup in human arteries. Many of the responses to sewer overflows are also repeat calls. The City has continued to promote a maintenance campaign to alleviate the environmental and financial impacts of this problem. One major element of the program has been an extensive cleaning of problem areas of the system. The second major element of the program is the education, prevention and enforcement effort coordinated by the Department's Industrial Pretreatment Program.

### **Water Reclamation Facility Plant Performance**

The City's two treatment facilities – North Durham and South Durham Water Reclamation Facilities - have the combined capacity to treat (or reclaim) 40 million gallons per day (MGD) of wastewater. During this reporting period, the average daily flow treated by the two plants was 19.80 MGD, with **no violations** of any applicable state and federal regulations at either of the City's two facilities. The schematic below shows the stages of a typical wastewater treatment process. To learn more, check out the interactive version on the City's website at [www.durhamnc.gov](http://www.durhamnc.gov) or call 560-4381 to set up a tour of one of our facilities.



### **Analytical Support**

Most laboratory analyses are performed at the City's state-certified laboratory located at the South Durham Water Reclamation Facility site. In addition to providing lab support for the reclamation facilities, the laboratory provides analytical support for the Water Supply and Treatment Division, the City's Storm Water Program and the City's Industrial Pretreatment Program. While the Storm Water Division of the Public Works Department is charged with eliminating illegal discharges into the storm sewers, the Industrial Pretreatment Program manages industrial and non-residential discharges into the City's sanitary sewer system. Each year, lab staff members conduct approximately **63,000 analyses on 62**

**different test parameters** to ensure compliance with permits and for process control!

### ***Industrial Pretreatment Program/Grease Reduction Initiative***

Industrial Pretreatment Program staff survey facilities discharging into the sewer system and issue permits to facilities in certain categories, determined either by the type of business activity they conduct or the type(s) of waste discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the North Durham Water Reclamation Facility or the South Durham Water Reclamation Facility – to assimilate, treat and remove substances from the waste. Currently, staff monitor twelve significant industrial users and hundreds of commercial establishments with high-strength discharges.

To help in the effort to reduce grease blockages in the sewer system, the Industrial Pretreatment Program staff coordinates the education and inspection portion of the grease reduction initiative. Grease enters the sewer system from both household drains as well as poorly maintained grease traps in restaurants and other food service establishments. To meet the 250 mg/L limit for FOG (fats, oil and grease), food preparation and/or processing facilities must clean their removal systems (grease traps) on a monthly basis. More frequent cleaning will be required if a facility discharges more than 250 mg/L of FOG. Less frequent cleaning may be permitted if the facility can demonstrate that the 250 mg/L limit can be met with an alternate cleaning schedule. Cleaning and removal records **must** to be maintained on-site for three years and available for inspection on request. While restaurants and other food service establishments typically use commercial processors to collect and remove grease from their grease traps, it is not practical for homeowners and residential customers to contract such services. For this reason, the City has provided – at no extra cost to citizens – a collection container for used cooking oil at the Waste Disposal and Recycling Center at 2115 East Club Boulevard. (See insert for tips on how to appropriately handle grease)

### **Important Phone Numbers**

All begin with 919 area code

**Report leaking/broken sewer lines, clogged sewer lines**

**Monday – Friday, 7:00 am until 4:00 pm**

**560-4344**

**After hours, weekends, holiday**

**560-4348**

**Questions about water and sewer bills**

**560-4411**

**Questions about sewer taps, applications, extensions**

**560-4326**

**Report illegal dumping in storm drain**

**560-SWIM (7946)**

**Questions about wastewater treatment, tours of facilities**

**560-4381**

**Questions about Household Hazardous Waste collection/disposal**

**287-8051**

***Other questions about City services? Call Durham One Call at 560-1200 or check out the City's website at [www.durhamnc.gov](http://www.durhamnc.gov)***



# Don't Feed the Grease Goblin!



- ✓ Put oil and grease in collection containers
- ✓ Remove oil and grease from kitchen utensils, equipment and food preparation areas with scrapers/towels/brooms
- ✓ Keep grease out of wash water
- ✓ Place food scraps in collection containers



- ✗ Pour oil and grease down drains
- ✗ Wash fryers/griddles, pots/pans and plates with water until oil and grease are removed
- ✗ Use hot water to rinse grease off surfaces
- ✗ Put food scraps down drains

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## Focus on Fat Free Sewers

Sewer overflows and backups can cause health hazards, damage home interiors and threaten the environment. In Durham, 75% of sewer blockages and spills are caused by grease. Grease gets into the sewer from household drains as well as from poorly maintained grease traps in food service establishments.

Where does grease come from? As we all know, grease can form as a by-product of cooking with lards, meat fats, shortening, butter & margarine and other substances. Grease can get washed into the plumbing system by being poured down the drain or toilet, or just by washing greasy pots and pans. As the grease in the system cools, it will stick to the sides of sewer pipes, both on property and in the streets. Over time, the grease builds up, blocking the entire pipe causing backups and overflows.

Home garbage disposals do not keep grease out of the plumbing or sewer system. Disposals only shred solid material into smaller pieces and actually may provide more materials for grease to stick to.

The easiest way to solve the grease problem and help prevent spills and overflows is to keep grease out of the system. Follow the tips and don't feed the Grease Goblin (appears courtesy of the NC Division of Pollution Prevention and Environmental Assistance).

# ¡No Alimente al Duende de Grasa!



- ✓ Ponga la grasa en contenedores apropiados
- ✓ Remueva el aceite y la grasa de utensilios de cocina, equipos, y areas de preparación de comidas con espátulas/toallas/escobas
- ✓ Mantenga la grasa fuera de el agua de lavar
- ✓ Ponga los desperdicios de comida en contenedores adecuados



- ✗ No tire aceite o grasa en los drenajes
- ✗ No lave con agua freidoras/planchas, ollas/cacerolas y platos hasta que el aceite y la grasa hayan sido removidos
- ✗ No use agua caliente para limpiar la grasa de las superficies
- ✗ No tire desperdicios de comida en los drenajes

## ***SPILLS AND OVERFLOWS FROM JULY 2004 THROUGH JUNE 2005***

<b>LOCATION</b>	<b>DATE</b>	<b>VOLUME Gallons</b>	<b>CAUSE</b>	<b>REMEDY</b>	<b>IMPACT</b>
Devon Rd. and Dixon Rd.	07/25/04	12,000	Debris in Line (MH Insert)	Flushed Sewer Main	None Noted
500 North Duke St.	07/27/04	600	Blockage of Grease/Roots	Cleaned/Sawed Roots/TVed main line	None Noted
Devon Rd. and Cambridge Rd.	08/10/04	200	Grease blockage	Cleaned and TVed main line	None Noted
Cameron Blvd. and Erwin Rd.	08/23/04	28,000	Sewer Main Collapse	Cleaned and TVed main line, Replaced 28' of 12" VCP with PVC	None Noted
Ward St. Outfall #141	09/13/04	13,000	Sewer Main Collapse	Cleaned and TVed main line, Replaced 18' of 8" VCP with DIP	None Noted
1203 Woodcroft Pkwy.	09/27/04	30,000	Grease blockage	Cleaned and TVed main line	None Noted
818 Larchwood Dr.	11/10/04	8,000	Grease blockage	Cleaned and TVed main line	None Noted
Hwy. 54 and Amhurst St.	01/12/05	10,000	Grease blockage	Cleaned and TVed main line	None Noted
Green St. and Edith St.	01/23/05	250	Blockage of grease/rags	Cleaned and TVed main line	None Noted
103 Whetstone Ct.	01/26/05	700	Grease blockage	Cleaned and TVed main line	None Noted
Forge Rd. and Wheeling Circle	01/31/05	1,000	Grease blockage	Cleaned and TVed main line	None Noted
Lychan Pkwy.	02/02/05	10,000	Grease blockage	Cleaned and TVed main line	None Noted
Hwy. 147 and 15/501	02/17/05	10,000	Grease blockage	Cleaned and TVed main line	None Noted
99 Keystone Place	02/28/05	2,000	Grease blockage	Cleaned and TVed main line	None Noted
24 Phauff Ct.	04/15/05	6,000	Blockage of grease/rags	Cleaned and TVed main line	None Noted
Glen Pines Trail (Apts.)	05/21/05	13,000	Blockage of grease/rags	Cleaned and TVed main line	None Noted
1417 Milan St.	05/29/05	3,000	Blockage of grease/rags	Cleaned and TVed main line	None Noted
801 Stadium Dr.	05/29/05	13,500	Blockage of Grease/Roots	Cleaned/Sawed Roots/TVed main line	None Noted
205 Pilot St.	06/01/05	3,000	Blockage of rags	Cleaned and TVed main line	None Noted
1918 E.Main St.	06/13/05	10,000	Blockage of grease/rags	Cleaned and TVed main line	None Noted
South St. and Lakewood Ave.	06/20/05	2,400	Blockage of Grease/Roots	Cleaned and TVed main line	None Noted
Dead End of Mathison St. (Burton School)	06/22/05	1,500	Leaking Joint in Sewer Main	Cleaned and TVed main line Replaced 12' of 8" VCP with PVC	None Noted
2427 Alpine St.	06/24/05	3,000	Blockage of Grease/Roots	Cleaned/Sawed Roots/TVed main line	None Noted
Main St. and Maple St.	06/24/05	3,000	Blockage of Grease/Roots	Cleaned/Sawed Roots/TVed main line	None Noted
Total number of spills = 25			Total volume = 187,250 gallons		

The total number of spills for the current reporting period has decreased by 31% from the previous fiscal year. Additionally, the total volume of reportable spills has been significantly reduced – by 61% over the previous fiscal year.